

54. (Amended) The identification tag of claim 28, wherein a write control component contains at least one memory section for storing information.

Please add new claims 69 and 70 as follows:

69. (New) An identification tag according to claim 27, wherein said dipole antenna for receiving radio wave energy is tuned for a frequency between 10 GHz and 16 GHz.

70. (New) An identification tag according to claim 28, wherein said dipole antenna for receiving radio wave energy is tuned for a frequency between 10 GHz and 16 GHz.

REMARKS

These remarks follow the order of the detailed Office Action beginning at page 2 thereof.

Claim Objections

In claim 27 Applicant has amended line 5 to refer to "an" integrated circuit in order to correct antecedent basis. This amendment has also been made in line 5 of claim 28. In claim 28, the integrated circuit is now recited as an initial recitation because this integrated circuit is a portion of the entire application's specific integrated circuit which is recited as having an integrated circuit.

In claim 28, line 8, Applicant has amended the claim to recite radio wave energy. Applicant, however, believes that the term

"from a receiver" is incorrect because the antenna is recited as receiving. Perhaps, the Examiner is referring to a transmitter, however, a transmitter is not part of the claim. If there are further questions regarding this portion of the claim, it is respectfully requested that the Examiner telephone the undersigned.

In claim 28, line 10 and line 9, the Examiner has suggested that before the term "receiver", "a" should be changed to "the." In line 9, Applicant has stated that the transmission is to a receiver not located on the die. This, however, is the first recitation of such a receiver. Again, it is requested that the Examiner telephone the undersigned if there is any further question with respect to lines 8 and 9 of claim 28.

Claim Rejections - 35 U.S.C. § 112

Claims 34 and 54 have been objected to on the ground that "the right control component" lacks antecedent basis. In response, each of these claims has been amended to initially recite "a right control component."

Claim Rejections - 35 U.S.C. § 103

Claims 27 - 68

Claims 27 - 68 have been rejected as being unpatentable over Murdoch '583 in view of Goff '137. This rejection is respectfully traversed for the reasons which follow.

Claim 27

Claim 27 recites an application specific integrated circuit having a number of components which include a first dipole antenna and a second dipole antenna. The first and second dipole antennas are part of the integrated circuit die. Murdoch '583 teaches

energization by an ultrasonically oscillating magnetic field, and a transponder portion of the chip which provides a modulated radio frequency (RF) signal which is injected into a transmitting part of the coil or inductive means. A single antenna is used for simultaneous powering, data reception and data transmission. These three operations occur independently of each other in the same antenna coil (see column 10, line 41 - 46). These, however, are three separate functions, with separate frequencies. As the Examiner pointed out, and as pointed out in Goff '137, a dipole antenna is unique to a single frequency, and certainly not unique to the three separate functions upon which Murdoch '583 depends.

Murdoch '583 at column 18, lines 29 - 43 first teaches that the antenna can be incorporated onto a single chip. However, Murdoch does not teach or suggest that such an antenna can be a dipole antenna. Instead, Murdoch suggests that there be strong coupling to insure that there is sufficient voltage induced without tuning. Murdoch points out that tuning magnifies voltage induced in the antenna coil by the "Q" of the tune ??? circuit. In contrast, a dipole antenna by its very nature is a highly tuned antenna which is matched to the circuitry. Therefore, Murdoch '583 does not in any suggest or lead one to the use of a dipole antenna.

Next, with respect to claim 27, Applicant claims first and second dipole antenna's. Claim 27 is simply not met by Murdoch or Murdoch in combination with Goff '137. Murdoch '583 in column 13, lines 14 - 16 suggests the use of separate coils for transmission and reception. Similarly, Goff '137 suggests the use of multiple coils at column 6, lines 35 - 38. However, the suggestion of use

of separate dipole antenna's on a chip for the widely varying frequencies found in Murdoch is simply not suggested. As the Examiner has noted in the Office Action at page 4, beginning at line 14, dipole antennas tend to be larger in size. This observation is also supported by Goff '137 beginning at line 26 and continuing through 45. The size of a dipole antenna is related to the frequency. In Murdoch '137, there is a serious problem with the frequency of the magnetically responsive element because it is a low frequency element. On the other hand, in the case where Goff addresses the use of a dipole antenna, the frequency is disclosed to be in the order of 2.45 GHz (see column 7, line 17). Such high frequencies are not disclosed in Murdoch '583. For this reason alone, the use of a dipole in '583 cannot be obvious. The Examiner merely argues that "Murdoch can be modified to use dipole antennas for receiving and transmitting purposes depending upon particular application of the tags (e.g., operating on a high frequency)." Here the Examiner clearly recognizes the failing in the combination of the references which is a teaching of Murdoch at high frequencies. Murdoch, in fact, requires two modifications, namely changing of the antennas and the frequency. This is a two step modification which could have only been arrived at by the use of 20/20 hindsight, which is not permissible in making out a *prima facie* case of obviousness.

The Examiner merely concludes without support that it would be obvious to a person of ordinary skill in the art to use dipole antennas to the tags of Murdoch with the teaching of Goff for different applications of the tags (high operating frequencies).

Here the Examiner should note that Applicant has also included new claims 69 - 70 which specify Applicant's frequency in the order of 10 GHz through 16 GHz. These frequencies are disclosed in Applicant's specification at page 8, line 12, page 46, line 7, page 20, lines 9 - 11. Even all of the references taken singularly and in combination do not disclose such high frequencies. The highest frequency disclosed in the art of record is 2.45 GHz found in Goff at column 7, line 17.

Goff also discloses magnetically-responsive elements used for parts of antennas. Goff, however, also discloses parasitically coupled antennas made of magnetically-responsive materials. Magnetically-responsive materials, however, are not related to dipole antenna technology and, hence, have not bearing on dipole teachings found elsewhere in Goff.

Claim 28

See argument above with respect to claim 27.

Claims 29 - 32 and 49 - 52

In the rejection of the above captioned claims, the Examiner has not explained how the combination of Goff and Murdoch is taught by the references taken singularly or together. The Examiner only states what each discloses, but does not state that there is any teaching or suggestion in the references taken singly or as a whole which would lead to the claimed invention.

Claims 33 - 53

The Examiner has misinterpreted Goff. Goff clearly teaches microwave radiation frequencies of 2.45 GHz this can be a microwave oven.

Claims 36 and 56

The Examiner has no disclosure of a multiplexer any place in Murdoch or elsewhere. Absent such disclosure, the Examiner clearly has not made out a *prima facie* case of obviousness.

Claims 37 and 57

The Examiner has cited no example of use of a pulse generating circuit in an identification tag in the prior art of record or elsewhere. Absent such disclosure, the Examiner clearly has not made out a *prima facie* case of obviousness.

Claims 42 and 62

Murdoch at column 16, lines 6 and 7 states that a timing reference may be divided down and used directly as a clock signal. The timing reference in this case is clearly a mere multiple of the clock. The timing reference referred to is related to the carrier oscillator frequency. On the other hand, Applicant's claim is for a clock generator circuit per se, not dividing down of an input frequency.

Claims 44 and 64

This rejection is respectfully traversed. The Examiner has not explained how one would combine the concept of the back scatter antenna with the dipole antenna set forth in the parent claims. Why it would be obvious to use a back scatter antenna with a dipole antenna as found in Goff '137 in combination with Murdoch '583 is simply not explained in the rejection. There is no reason or teaching of why one would combine these references to arrive at a back scatter antenna in the combination. Still further, as the

Examiner admits, a back scatter antenna is not even present in the references relied upon.

Claims 28 and 49 - 68

The Examiner is correct in noting the Carroll, like Murdoch, does not disclose that the antenna is a dipole antenna. Carroll is another example of a magnetically driven device which utilizes an RF carrier signal. Since the antennas disclosed in Goff are large (see Figure 9A and 9B) this shows an antenna on a chip substrate (88), the frequency is, therefore, large. Once again, the Examiner has not shown why one would go to the high frequency of Goff to use a dipole antenna in place of a spiral antenna. The Examiner has merely concluded that a person of ordinary skill in the art would modify a Carroll device to use dipole antennas for receiving and transmitting purposes depending upon the particular application of the tags (e.g., operating on a high frequency). The Examiner argues only that integrating dipole antennas onto an IC is doable. This, however, is not a teaching in the prior art which is required for a suggestion or reason to combine.

Carroll beginning at column line, line 33 teaches that placement of an antenna coil on a chip is not readily known in the art (this warns away from the combination). Carroll, however, goes on to teach a way of placing a coil on a chip.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

In view of the foregoing, it is respectfully submitted that the application is now in condition for allowance, and early action in accordance thereof is requested. In the event there is any reason why the application cannot be allowed in this current condition, it is respectfully requested that the Examiner contact the undersigned at the number listed below to resolve any problems by Interview or Examiner's Amendment.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADEIn the Claims:

Claims 27, 28, 34, and 54 have been amended as follows:

27. (Amended) An identification tag for application to objects comprising in combination:

an application specific integrated circuit die having;

a signal receiving system for receiving data containing information and programming into [the] an integrated circuit[;],

a data processing system for reading out information from the integrated circuit[;],

a first dipole antenna for receiving radio wave energy;

a power storage means for storing the radio wave energy received by the first dipole antenna and for supplying energy to the integrated circuit[;], and

a second dipole antenna for transmitting information from the integrated circuit to a receiver.

28. (Amended) An identification tag for application to objects comprising in combination:

an application specific integrated circuit on a die having;

a signal receiving system for receiving data containing information and programming into [the] an integrated circuit[;],

a data processing system for reading out information from the integrated circuit[;],

a dipole antenna for receiving radio wave energy and transmitting information from the integrated circuit to a receiver not located on the die[;], and

a power storage means for storing the radio wave energy received by the dipole antenna and for supplying energy to the integrated circuit,

wherein all components are located on the die.

34. (New) The identification tag of claim 27, wherein **[the]** a write control component contains at least one memory section for storing information.

54. (New) The identification tag of claim 28, wherein **[the]** a write control component contains at least one memory section for storing information.

New claims 69 and 70 have been added above.